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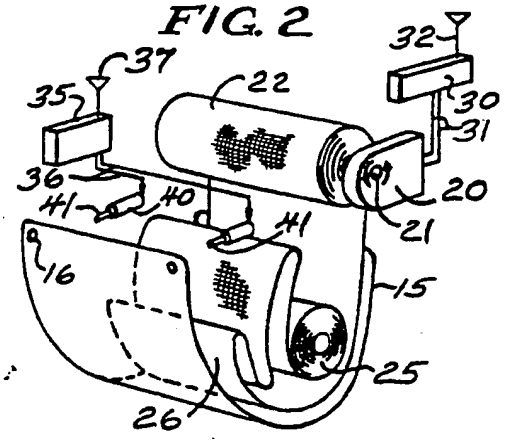
(54) System for selectively activating dispensers.

(57) A system for automatically enabling selected ones of a plurality of dispensers (10) to be operated in a predetermined sequence in which each dispenser in a plurality of dispenses has storage for a quantity of goods (25) to be dispensed and mechanism (20) for dispensing the stored goods in repeated dispensing operations. Each dispenser has a storage condition wherein the stored goods are unavailable for use and a dispensing condition wherein the stored goods can be dispensed by a user. A transmitter (30) is associated with each dispenser for transmitting a signal, and each dispenser has mechanism for sensing an event and for activating the associated transmitter in response thereto. A receiver (35) is associated with each dispenser for receiving a predetermined signal from a transmitter, and a latch mechanism (40, 41) is operatively connected to each receive for changing the dispenser from the storage condition thereof to the dispensing condition thereof in response to the preselected signal from the transmitter, so that the stored goods in the dispenser become available to be dispensed to a user.

FIG. 2



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This invention pertains to a system for automatically enabling selected ones of a number of dispensers to be operated in a predetermined sequence. While the invention broadly encompasses the dispensing of any goods such as soap, confectionery linen or paper towels or the like, it is intended to be used with linen towel dispensers of the kind commonly found in washrooms, factories and other commercial locations.

It is relatively common for a commercial establishment to have more than one dispenser and since these dispensers are serviced only periodically, uneven usage results in certain of the dispensers being empty and others of the dispensers being partially used and still others being hardly used at all. In order to alleviate this uneven usage, it is proposed to provide a system wherein at least one and maybe more than one dispensers are made available for use while the other dispensers are unavailable for use. Upon the occurrence of an event, which may be the absence or near absence of the material in the dispenser, a triggering mechanism causes other dispensers to become available for use. By this system, it is proposed that the material to be dispensed, whether it is linen towels, soap or confectionery will be used in a more orderly and efficient manner. For soap and towels, this results in easier maintenance and a more complete use of the material to be dispensed while for confectionery and the like it results in fresher goods being available since none of the goods will be retained for prolonged periods of time, thus becoming stale.

A principal object of the invention is to provide a system for automatically and sequentially making available dispensers having dispensable goods stored within upon the happening of a specific event which triggers mechanism and converts a select number of dispensers from a condition in which the goods to be dispensed are not available for use into a condition where the goods to be dispensed are available for use.

The invention consists of certain novel features and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the details may be made without departing from the spirit, or sacrificing any of the advantages of the present invention.

Brief Description of the Drawings

FIGURE 1 is a perspective view of a towel cabinet in a condition wherein the clean toweling is unavailable for use;

FIG. 2 is an exploded view of the principal components of the towel cabinet of Fig. 1 with the housing removed;

FIGS. 3 to 5 are perspective views like Fig. 1 showing the positions of the towel cabinet as it is transformed from a condition wherein the toweling is unavailable for use to a condition in which the toweling is available for use; and

FIG. 6 is a schematic representation of several sequential operations for a plurality of dispensers.

Detailed Description of the Invention

Referring now to the drawings there is disclosed in Figs. 1-5, a representative dispenser 10 which in the illustration is for clean linen toweling; however, the invention is not limited to toweling and is applicable to the various items hereinbefore discussed and to others those skilled in the art will appreciate. The towel dispenser 10 includes a cabinet 11 having a pair of opposed side panels 12 interconnected by a pivoted cover 13. The cover 13 is shown in the closed position in the drawings but is pivoted to open to have soiled towelling removed and clean towelling replaced. It is common in the towel dispensing art to sense an event, such as the absence of towelling or the lack of tension, and to actuate a device such as a spring in response to the event to cause something to happen, such as the tail end of a towel roll being taken into a cabinet, for instance see U.S. patent application filed by Hartman et al., serial no. 164,456, March 4, 1988, Steiner et al., U.S. patent no. 3,502,383 issued March 20, 1970, P.W. Jespersen, U.S. patent no. 3,437,388 issued April 8, 1969 and to E.B. Bahnsen, U.S. patent no. 3,323,848 issued June 6, 1967, the disclosures of which are incorporated herein by reference. At the bottom of the present towel cabinet is a flexible shield 15 having a pair of spaced apart apertures 16 at the free end thereof. The flexible shield 15 is fixedly connected to the rear of the towel cabinet and is flexibly wrapped around the bottom of the towel cabinet and releasably connected inside the cover 13, as will be explained.

The towel dispenser 10 further includes a towel take-up mechanism 20 which is well known in the art having a shaft 21 which is motorized either by electrical means or by a spring. Around the shaft 21 is stored the used toweling 22, as is well known. A roll of clean toweling 25 is housed within the cabinet 11 and has a loop 26 which in use extends downwardly and below the cabinet for ready access by an intended user.

The towel dispenser 10 has a transmitter 30 connected to the towel take-up mechanism 20 by leads 31 and an antenna 32. A receiver 35 is connected by suitable means 36 to a pair of solenoids 40 each having a retractable pin or piston 41

which is dimensioned to fit through the adjacent or aligned aperture 16 at the end of the shield 15.

Figure 1 of the drawings shows a towel dispenser 12 in the condition wherein the fresh toweling 26 is unavailable for use and in that condition the cover 13 is closed, the shield 15 is snugly wrapped around the exterior loop 26 and traps the loop against the bottom of the cabinet 11, and the pins or pistons 41 of the solenoids 40 extend through the associated aperture 16 in the shield 15 to maintain the shield in position. In addition, in the condition shown in Fig. 1 with the cover 13 in place, the pistons 41 of the solenoids 40 are secure against tampering due to the fact that the pistons are protected by the cover 13. This is an important feature to prevent unauthorized dispensing of the toweling 26 from a towel dispenser 10 prior to the sequence hereinafter described so as to ensure that the users of the toweling use the toweling in the preferred manner, that is to exhaust the toweling in one cabinet before another cabinet is made available for use. Representative sequences which may be employed by dispensers of the present invention, whether towel dispensers, soap dispensers, confectionery dispensers or the like, are illustrated in Fig. 6 and include an eight dispenser sequence which is labeled the daisy chain dispenser or two pairs of four dispensers in a grouping labeled the daisy chain pair. It will occur to those skilled in the art that various other configurations may be used but these are representative examples of the types of sequencing which may be advantageous.

In the daisy chain configuration, when towel dispenser number one has the clean toweling roll 25 exhausted, mechanism well known in the art cited hereinbefore but not shown herein causes activation of the transmitter 30. The transmitter 30 is set to emit a signal through the antenna 32 when an event such as the absence of clean toweling 25 occurs. This signal from the transmitter 30 is then received by the antenna 37 of the receiver 35 in the cabinet number 32. Such coding is well known in the garage door opening art as taught by a variety of patents in that field such as the patents to Collins et al., U.S. Patent 4,377,006, the patent to Willmott U.S. patent no. 4,037,201 and the patent to Goldstein U.S. patent no. 3,445,848, the disclosures of which are incorporated herein by reference. These patents show that it is well known in the art to provide digital codes to transmitter-receiver pairs and that these transmitter-receivers may utilize signals which are ultrasonic, infrared or RF in nature but in any event each receiver provides a coded signal which is capable of being received by only those receivers which have been set to receive the signal. In this manner the event which causes the transmitter 30 to emit a signal through antenna 32 can activate only one or more specific receivers 35 which then in turn, as described, activate the associated solenoids 40, retracting the pins or pistons 41 thereby permitting the flexible shields 15 to move from the position shown in Fig. 1 to the position shown in Fig. 5 wherein the toweling 26 is available for use. A shield 15 may be made of any synthetic organic resin or any other pliable material which will not crack or fail with repealed use. A simple polyethylene shield is entirely satisfactory for the operation of the present invention but other plastics or other materials may be more desirable either because of cost or availability. It is intended that alternatives to the simple shield such as a segmented shield or even a plastic soiled non-flexible shield fall within the purview of the invention.

Claims

1. A system for automatically enabling selected ones of a plurality of dispensers (10) to be operated in a predetermined sequence comprising: a plurality of dispensers each having storage for a quanitity of goods (22) to be dispensed and a mechanism (20) for dispensing stored goods in repeated dispensing operations, each dispenser having a storage condition wherein the stored goods are unavailable for use and a dispensing condition wherein the stored goods can be dispensed by a user, a transmitter (30) associated with at least one dispenser for transmitting a predetermined signal, means associated with each dispenser having a transmitter for sensing an event and for activating said transmitter in response thereto, a receiver (35) associated with at least one dispenser for receiving the predetermined signal from said transmitter, and actuating means (40,41) operatively connected to said receiver for changing the dispenser from the storage condition thereof to the dispensing condition thereof in response to the preselected signal from said transmitter, whereby the stored goods in said dispenser become available to be dispensed by said dispensing mechanism to a user.

2. A system as claimed in Claim 1 wherein there are two dispensers.

3. A system as claimed in Claim 1 wherein there are more than two dispensers, at least one of said dispensers having a said transmitter and a said receiver.

4. A system as claimed in any one of Claims 1 to 3 wherein the or each transmitter sends a

signal which activates a respective one receiver only.

5. A system as claimed in any one of Claims 1 to 4 wherein the event sensed is the absence of goods to be dispensed.

6. A system as claimed in any one of Claims 1 to 5 comprising a plurality of said transmitters and wherein each transmitter sends a different signal and only one receiver is capable of receiving each signal.

7. A system as claimed in any one of Claims 1 to 6 wherein the stored goods are towelling.

8. A system as claimed in Claim 7, said dispensers comprising towel cabinets (11) each containing a supply of clean towelling (25), said mechanism comprising means (20) for dispensing clean towelling in metered portions into a loop (26) exterior of the associated towel cabinet, a flexible shield (15) having one end edge thereof fastened to a rear of the cabinet and latch means (40,41) detachably connecting the other end of said shield to said cabinet for retaining the exterior loop of clean towelling unavailable for use, a plurality of said transmitters (30) transmitting a predetermined signal in response to the absence of clean towelling, means for sensing the absence of clean towelling, and for activating said transmitters, said receiver (35) connected to said latch means (40,41) for releasing said flexible shield in response to a signal from a said transmitter to make the exterior loop of clean towelling available for use, each of said receivers being capable of receiving a signal from only selected ones of said transmitters, whereby a signal from one transmitter operates only selected latch means to make clean towelling available.

9. A system as claimed in Claim 8 wherein said latch means includes a solenoid (40) having a pin (41) engaging said flexible shield to retain said shield in position to trap the exterior loop of towelling between the cabinet and said shield, said solenoid being actuated to retract said pin to release said shield.

10. A system as claimed in Claim 9 wherein said shield has a pair of apertures (16) near the other end thereof and said latch means includes a pair of solenoids each having a pin which when extended fits through one of the apertures, and further comprising a pivotable cabinet cover (13) which fits over the end of the shield having the apertures so the cabinet is tamper-proof while the shield is in postion to maintain the clean towelling unavailable for use.

FIG. 1

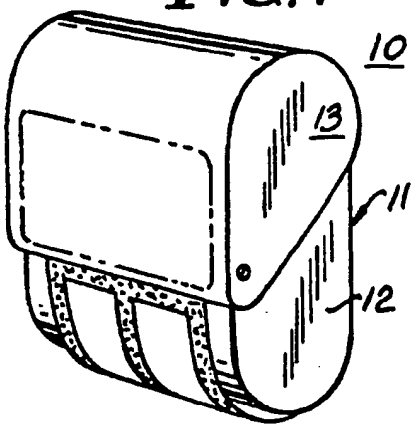
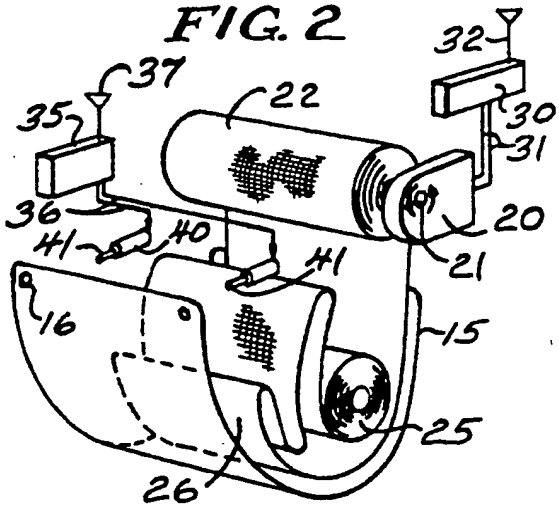


FIG. 2



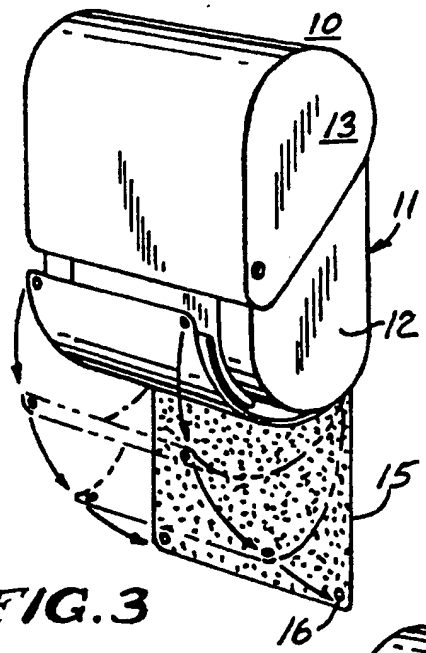
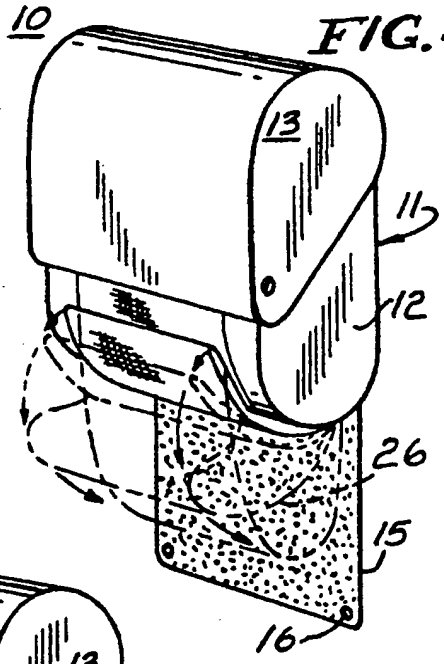


FIG. 3

FIG. 4



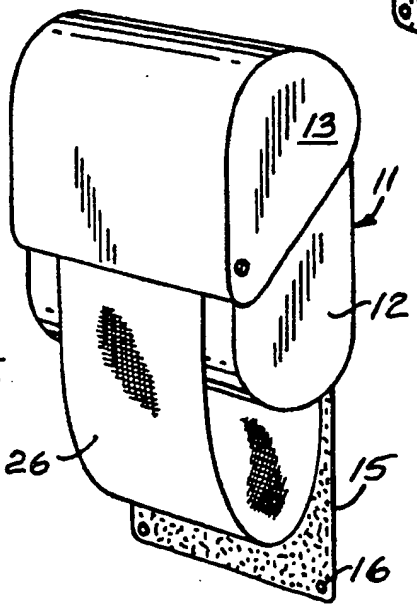
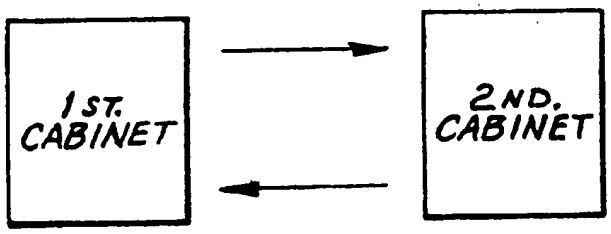
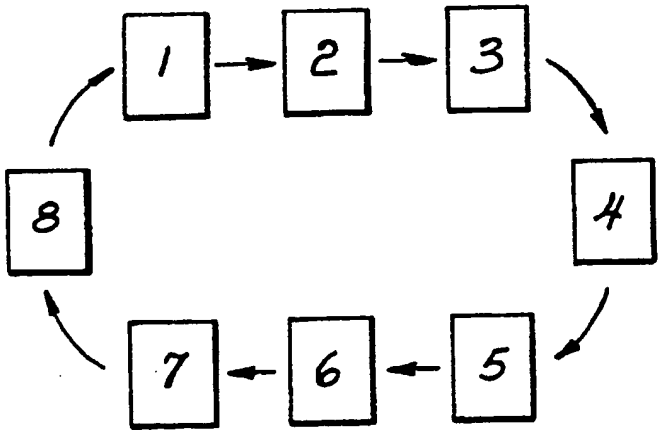


FIG. 5

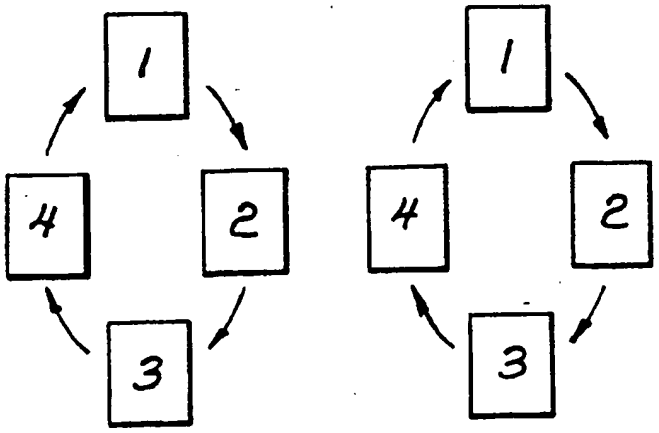
FIG. 6



DUPLEX PAIR



DAISY CHAIN



DAISY CHAIN PAIR

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 6010

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-2 162 151 (DUDLEY INDUSTRIES LTLD) * Page 1, lines 35-73,90-99; page 2, lines 19-38; figures *	1,2,5,7,8	A 47 K 10/28
A	GB-A-7 749 70 (CHICAGO TOWEL CO.)		
A	NL-A-8 600 003 (TEUNIS TEL)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A 47 K
G 07 F
A 47 F

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	24 January 91	KAPPOS A.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
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